

SAN LUIS UNIT

**DRAFT ENVIRONMENTAL IMPACT STATEMENT
LONG-TERM CONTRACT RENEWAL**

**Appendix B
Major San Luis Unit Facilities and Operations**

September 2005

APPENDIX B – MAJOR SAN LUIS UNIT FACILITIES AND OPERATIONS

Delta Cross Channel

The Delta Cross Channel is a 1.2-mile-long, controlled diversion channel between the Sacramento and Mokelumne Rivers. At the north end of the Delta, the Delta Cross Channel combines with several natural channels to carry water approximately 50 miles to the Tracy Pumping Plant. Reclamation believes that the Delta Cross Channel and the training works in the San Joaquin River are necessary to prevent lesser quality water in the San Joaquin River from reaching the Tracy Pumping Plant.

To combat saltwater intrusion in the Delta and to dilute local pollution, the Delta Cross Channel draws fresh water from the Sacramento River to the Mokelumne River. The diversion also provides an adequate supply of water to the Delta-Mendota and San Luis Canals and improves irrigation supplies in the Delta. During high water, Reclamation closes the control gates of the channel to prevent flood stages in the San Joaquin River section of the Delta. After the flood danger passes, the gates are reopened to allow Sacramento River water through to the Tracy Pumping Plant. The Delta Cross Channel is also operated to improve conditions for out-migrating chinook salmon and steelhead trout. The Operations Criteria and Plan (OCAP) as updated will address important operating criteria affecting the operation of the Delta Cross Channel.

Tracy Pumping Plant

Construction of the Tracy Pumping Plant, which consists of an inlet channel, pumping plant, and discharge pipes, was completed in 1951. Water received from the Delta is lifted 197 feet, pumped through discharge pipes, and carried approximately one mile up an inclined grade to the Delta-Mendota Canal and California Aqueduct. The power to run the pumps is supplied by CVP power plants.



Tracy Pumping Plant
Source: San Luis & Delta-Mendota Water Authority

Delta-Mendota Canal

The Delta-Mendota Canal, the second largest of the CVP waterways, was completed in 1951. It includes both concrete-lined and earth-lined sections and is about 117 miles in length. It carries water to be used as irrigation supply in the Delta-Mendota Canal and San Luis Unit southeasterly from the Tracy Pumping Plant along the west side of the San Joaquin Valley. It also provides the San Joaquin River Exchange Contractors Water



Delta-Mendota Canal at Mile 4.0
Source: San Luis & Delta-Mendota Water Authority

Authority¹ with water to replace San Joaquin River water stored by the Friant Dam and used in the Friant-Kern and Madera Canals. The canal transports water from the Tracy Pumping Plant to the Mendota Pool, which is controlled by a concrete storage dam constructed in 1919. The Mendota Pool is located at the confluence of the San Joaquin River and the north fork of the Kings River, approximately 30 miles west of Fresno. The Mendota Pool, a non-federal facility, has been owned, operated, and maintained by the Central California Irrigation District since 1919.

B. F. Sisk (San Luis) Dam and Reservoir

Completed in 1967, B. F. Sisk Dam is located on San Luis Creek near the City of Los Banos. It is the second largest earthfill dam in the United States and is 382 feet high with a crest length of 18,600 feet. The dam's crest is 30 feet thick and the maximum base width is 2,420 feet.



San Luis Reservoir
Source: San Luis & Delta-Mendota Water Authority

San Luis Reservoir (also known as the B. F. Sisk Reservoir) is located adjacent to O'Neill Forebay and has a capacity of 2,041,000 acre-feet. The off-stream reservoir acts as a major storage reservoir for surplus Delta flows. Releases are made through the William R. Gianelli Pumping-

¹ The San Joaquin River Exchange Contractors Water Authority includes the Central California Irrigation District, the San Luis Canal Company, the Columbia Canal Company, and the Firebaugh Canal Water District.

Generating Plant, utilizing its generating capacity to generate power. The reservoir filled for the first time on May 31, 1969. A hydraulic junction point for both federal and state waters, the reservoir also serves as a forebay for the William R. Gianelli Pumping-Generating Plant. The dam's spillway functions as a safety device to release any excess storage.

O'Neill Dam and Forebay

O'Neill Dam and Forebay are located on San Luis Creek, 2.5 miles downstream from San Luis Dam. Completed in 1967, the dam is a zoned earthfill structure with a height of 87 feet and a crest length of 14,300 feet. The forebay has a capacity of approximately 56,400 acre-feet, of which the 20,000 acre-feet of the forebay act as re-regulator storage necessary to permit off-peak pumping and on-peak generation by the William R. Gianelli Pumping-Generating Plant.

The 2,200-foot-long O'Neill Forebay Inlet Channel conveys water from the Delta-Mendota Canal to the O'Neill Forebay. O'Neill Forebay acts as an equalizing basin for the upper stage dual-purpose pumping-generating plant. Six pumping units of the O'Neill Pumping-Generating Plant lift water 45 to 53 feet into the forebay. When not pumping, these units generate electric power by reversing flow through the turbines. The forebay is used as a hydraulic junction point for federal and state waters.

O'Neill Pumping-Generating Plant and Intake Canal

The O'Neill Pumping-Generating Plant consists of an intake channel leading off the Delta-Mendota Canal and six pumping-generating units. These units operate as pumps to lift water from 45 to 53 feet into the O'Neill Forebay. When water is released from the forebay to the Delta-Mendota Canal, these units operate as generators. When operating as pumps and motors, each unit can discharge 700 cubic feet per second (cfs) and has a rating of 6,000 horsepower. When operating as turbines and generators, each unit has a generating capacity of about 4,200 kilowatts.

William R. Gianelli Pumping-Generating Plant

The William R. Gianelli Pumping-Generating Plant, located flush against San Luis Dam, operates as both a pumping station and a generating plant. The plant lifts water by pump-turbines from O'Neill Forebay into San Luis Reservoir. During the irrigation season, water is released from San Luis Reservoir through the pump-turbines to the forebay, and energy is reclaimed. Each of the eight pumping-generating units uses 63,000 horsepower when pumping or will develop



**William R. Gianelli
Pumping-Generating Plant**
Source: DWR

53,000 kilowatts when generating. This plant became California's largest hydroelectric plant at its completion in 1967.

San Luis Canal

The San Luis Canal is a joint-use facility owned and operated with the Department of Water Resources (DWR). The concrete-lined canal has a conveyance capacity ranging from 8,350 to 13,100 cfs and is the biggest earth-moving project in Reclamation history. The San Luis Canal is the federally-built and operated section of the California Aqueduct. It extends 102.5 miles from O'Neill Forebay in a southeasterly direction to its terminus at Kettleman City.



San Luis Canal
Source: DWR

Dos Amigos Pumping Plant

The Dos Amigos Pumping Plant is located 17 miles south of O'Neill Forebay and is a relief plant in the San Luis Canal. The plant contains six pumping units, each capable of delivering 2,200 cfs of water.

Pleasant Valley Pumping Plant

The Pleasant Valley Pumping Plant pumps water into the Coalinga Canal. The Westlands Water District operates and maintains this pumping plant. This facility lifts water 180 feet from an intake channel leading from the San Luis Canal at mile 74. Nine units are used to deliver 1,135 cfs of water into the Coalinga Canal and 50 cfs of water to a distribution lateral serving adjacent lands north of the pumping plant.

Coalinga Canal

Formerly called the Pleasant Valley Canal, the Coalinga Canal carries water from the turnout structure on the San Luis Canal to the Coalinga area in Fresno County. The system includes a 1.6-mile intake channel to the Pleasant Valley Pumping Plant and 11.6 miles of canal. The initial capacity of the canal is 1,100 cfs, decreasing to 425 cfs at the terminus. The Westlands Water District operates sections of the Coalinga Canal. The City of Coalinga is served from this facility.

Los Banos and Little Panoche Detention Dams and Reservoirs

The Los Banos and Little Panoche Detention Dams are located southwest of the city of Los Banos on Los Banos and Little Panoche Creeks. Both are zoned earthfill detention dams. These dams are required to protect the San Luis Canal by controlling flows of streams crossing the canal.

Completed in 1965, Los Banos Detention Dam is 167 feet high with a 1,370-foot-long crest. It provides 34,500 acre-feet of flood control capacity with a maximum controlled release of 1,000 cfs. Los Banos Reservoir has a capacity of 34,600 acre-feet and protects the city of Los Banos and adjacent areas from damaging floods.

Completed in 1966, Little Panoche Detention Dam contains a little more than a million yards of earthfill in its 151-foot-high embankment. The dam's crest is 1,440 feet long and 30 feet wide. With a capacity of 5,580 acre-feet, Little Panoche Reservoir detains floodwater collected over 81.3 square miles of mountainous drainage area.

San Luis Drain and Kesterson Reservoir

The San Luis Drain was designed and partially constructed as a means to dispose of subsurface irrigation return flows from the San Luis Unit service area. The drain was designed to collect subsurface drainage from the San Luis Unit service area and transport the water for disposal in the west Delta. Construction began in April 1968; however, the project was never completed as originally planned. Of the planned length of 188 miles, only 85 miles were ever completed. The concrete-lined canal ran from the town of Five Points in Fresno County to the former Kesterson Reservoir.

The first stage of Kesterson Reservoir was constructed as a series of 12 shallow ponds outside the town of Gustine in Merced County. The reservoir was designed to be a regulating reservoir, but for several years, water was ponded, regulated, and allowed to evaporate, pending the approval and construction of an outlet for the San Luis Drain. The reservoir was closed in 1985.

SAN LUIS UNIT

**DRAFT ENVIRONMENTAL IMPACT STATEMENT
LONG-TERM CONTRACT RENEWAL**

**Appendix C
Water Needs Assessment Summaries
for the Seven San Luis Unit Contractors**

September 2005

Contractor's Water Supply Sources and Quantities (acre-feet)

| Timeframe | Surface Water Supply | | | | | | Groundwater Supply | | | | Total Supply | |
|---------------------|----------------------|------------|-----|-------|--------------|---------------------|--------------------|----------|---------|------------|--------------|----------|
| | Maximum Delivery | USBR Total | SFP | Local | Local Source | Tran/Strn /Reynolds | Tran/ Out | District | Private | Safe Yield | | Recharge |
| I | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 1995 | 3,500 | 2,432 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 2,432 |
| 1997 representative | 3,500 | 2,432 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 2,432 |
| 2025 | 3,500 | 3,500 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 3,500 |

Contractor's Agricultural Water Demands

Maximum Productive Acres= 0

| Timeframe | Crop Water Requirement | District Irrig. Efficiency | Effective Precip | Reference Effective Precip | Calculated Net Crop Water Req | USBR Net Crop Water Req | Average Irrigated Acres | Reference Irrigated Acres | Calculated FDI | USBR FDI | Conveyance Loss | Total Ag Demand |
|-----------|------------------------|----------------------------|------------------|----------------------------|-------------------------------|-------------------------|-------------------------|---------------------------|----------------|----------|-----------------|-----------------|
| I | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| 1995 | | | | | | | | | | | | |
| 1997 | | | | | | | | | | | | |
| 2025 | | | | | | | | | | | | |

Contractor's M&I Water Demands

| Timeframe | Residential Water Demand | | | Non-Residential Water Demand | | | Loss | Rural Urban Per Capita Demand | Total Urban Per Capita Demand | Total M&I Demand | Total Ag+ M&I Demand | Unmet Demand |
|-----------|--------------------------|-------------------|--------------|------------------------------|-------------|--------------|------------|-------------------------------|-------------------------------|------------------|----------------------|--------------|
| | Population | Per Capita Demand | Total Demand | Industrial | Commer/ Ind | Total Demand | Unmet /Mtr | | | | | |
| I | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 |
| 1995 | 6,485 | 106.1 | 772 | 33 | 1,300 | 1,333 | 328 | 311.0 | 334.4 | 2,433 | 2,433 | 1 |
| 1997 | 6,495 | 106.1 | 772 | 33 | 1,300 | 1,333 | 328 | 311.0 | 334.4 | 2,433 | 2,433 | 1 |
| 2025 | 12,000 | 97.2 | 1,306 | 57 | 2,143 | 2,200 | 395 | 274.0 | 289.5 | 3,891 | 3,891 | 391 |

NOTE: Unaccounted beneficial use is added to distribution system loss; the total is shown under Distribution system loss.

* Represents Maximum Contract Amount

Water supply and demand information is for a normal hydrologic year. Crop Water Requirement includes leaching req. and external water but not irrigation efficiency.

Information from contractor's water management plan or data submitted for historical years. USBR references information for future years.

Quality control check; information is either calculated by USBR staff, or from reference.

Contractor's Water Supply Sources and Quantities (acre-feet)

| Year/Scenario | Surface Water Supply | | | | | | Groundwater Supply | | | | Total Supply | |
|---------------|----------------------|----------------------|-----|-------|---------------|------------------------|--------------------|----------|---------|------------|--------------|------------|
| | Reference Delivery | USBR Total Deliv/Max | SEP | Local | Local Sources | Irrig/Rain /Recycle In | Irrig/ Del | District | Private | Safe Yield | | Subsidence |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 1998 | 10,000 | 4,321 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4,321 |
| 1998 | 10,000 | 3,995 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3,995 |
| 2025 | 10,000 | 10,000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10,000 |

Contractor's Agricultural Water Demands

Maximum Productive Acres= 34,138

| Year/Scenario | Crop Water Requirement (acre-feet) | District Irrig. Efficiency (%) | Effective Precip (acre-feet) | Reference Effective Precip (acre-ft) | Calculated Net Crop Water Req (acre-feet) | USBR Net Crop Water Req (acre-feet) | Average Irrigated Acres (acres) | Reference Irrigated Acres (acres) | Calculated FUR (AF/acre) | USBR FUR (AF/acre) | Conveyance Loss (acre-feet) | Total Ag Demand (acre-feet) |
|---------------|------------------------------------|--------------------------------|------------------------------|--------------------------------------|---|-------------------------------------|---------------------------------|-----------------------------------|--------------------------|--------------------|-----------------------------|-----------------------------|
| 1 | 6 | 8 | 7 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| 1998 | | | | | | | | | | | | |
| 1998 | | | | | | | | | | | | |
| 2025 | | | | | | | | | | | | |

Contractor's M&I Water Demands

| Year/Scenario | Residential Water Demand | | | Nonresidential Water Demand | | | Loss | Est Urban Per Capita Demand (gpcd) | Calc Urban Per Capita Demand (gpcd) | Total M&I Demand (acre-feet) | Total Ag. M&I Demand (acre-feet) | Unmet Demand (acre-feet) |
|---------------|--------------------------|--------------------------|--------------------------|-----------------------------|-------------------------|--------------------------|---------------------------|------------------------------------|-------------------------------------|------------------------------|----------------------------------|--------------------------|
| | Population | Per Capita Demand (gpcd) | Total Demand (acre-feet) | Industrial (acre-feet) | Commu/ Inst (acre-feet) | Total Demand (acre-feet) | Storage /Dist (acre-feet) | 28 | 29 | 30 | 31 | 32 |
| 1998 | 14,990 | 257.3 | 4,321 | 0 | 0 | 0 | 0 | 311.0 | 257.3 | 4,321 | 4,321 | 0 |
| 1998 | 15,400 | 108.7 | 1,875 | 600 | 1,295 | 1,895 | 225 | 311.0 | 231.6 | 3,995 | 3,995 | 0 |
| 2025 | 27,000 | 279.8 | 8,455 | 0 | 0 | 0 | 0 | 274.0 | 279.8 | 8,455 | 8,455 | -1,548 |

Note: Unaccounted beneficial uses are added to distribution system losses and shown under Distribution system loss.

* Represents Maximum Contract Amount

Water supply and demand values shown for a normal hydrologic year. Crop Water Requirement includes leaching req. and natural water but not irrigation efficiency.

Information from contractor's water management plan or data submitted for historical years. USBR reference information for future years

Quality control check; information is either calculated by USBR 4/AFI, or from reference.

Division: West San Joaquin

Water Needs Assessment

District:

Date: 7/28/00

Agricultural and M&I Water Supply

MURON, CITY OF

Contractor's Water Supply Sources and Quantities (acre-feet)

| Decade | Surface Water Supply | | | | | | | Groundwater Supply | | | | Total Supply |
|--------|----------------------|-----------------------|-----|-------|--------------|-------------------------|-----------|--------------------|---------|------------|----------|--------------|
| | Reference Delivery | USBR Total Deliv./Max | SWP | Local | Local Source | Treat/Store /Recycle In | Wells/Out | District | Private | Safe Yield | Recharge | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 1996 | 3,000* | 962 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 962 |
| 2025 | 3,000* | 3,000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3,000 |

Contractor's Agricultural Water Demands

Maximum Productive Acres

| Decade | District Crop Water Requirement (acre-feet) | District Irrig. Efficiency (%) | Effective Precip. (acre-feet) | Reference Effective Precip. (acre-ft) | Calculated Net Crop Water Req. (acre-feet) | USBR Net Crop Water Req. (acre-feet) | Average Irrigated Acres | Reference Irrigated Acres | Calculated FDR (AF/acre) | USBR FDR (AF/acre) | Distribution Loss (acre-feet) | Total Ag Demand (acre-feet) |
|--------|---|--------------------------------|-------------------------------|---------------------------------------|--|--------------------------------------|-------------------------|---------------------------|--------------------------|--------------------|-------------------------------|-----------------------------|
| 1 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| 1996 | | 0 | | | | | | | | | 0 | |
| 2025 | | | | | | | | | | | | |

Contractor's M&I Water Demands

| Decade | Residential Water Demand | | | Commercial Water Demand | | | Loss | Ref Urban Per Capita Demand (gpcd) | Com Urban Per Capita Demand (gpcd) | Total M&I Demand (acre-feet) | Total Ag. M&I Demand (acre-feet) | Unmet Demand (acre-feet) |
|--------|--------------------------|--------------------------|--------------------------|-------------------------|-----------------------|--------------------------|------|------------------------------------|------------------------------------|------------------------------|----------------------------------|--------------------------|
| | Population | Per Capita Demand (gpcd) | Total Demand (acre-feet) | Industrial (acre-feet) | Comm/Inst (acre-feet) | Total Demand (acre-feet) | | | | | | |
| 1 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 |
| 1996 | 5,806 | 75.9 | 477 | 311 | 114 | 425 | 60 | 311.0 | 156.3 | 962 | 962 | 0 |
| 2025 | 12,610 | 76.0 | 1,060 | 710 | 280 | 970 | 0 | 274.0 | 143.6 | 2,060 | 2,060 | -940 |

Note: Unaccounted beneficial use is totaled with the distribution system loss. The total for both is shown under Distribution system loss.

* Represents Maximum Contract Amount

Water supply and demand information is for a normal hydrologic year. Crop Water Requirement includes leaching req. and cultural water but not irrigation efficiency.

Information from contractor's water management plan or data submitted for historical years. USBR reference information for future years.

Quality control check; information is either calculated by USBR staff or from reference.

Contractor's Water Supply Sources and Quantities (acre-feet)

| Timeframe I | Surface Water Supply | | | | | | Groundwater Supply | | | | Total Supply E | |
|-----------------|----------------------------|------------------------------|----------|------------|-------------------|---------------------------------|-----------------------------|--------------------|---------------|----------------------|-------------------|----------------|
| | Reference Delivery 2 | USBR Total Daily/Max 3 | SWP 4 | Local 5 | Local Source 6 | Irrig/Urban /Resycle In 7 | Irrig/ Urban Out 8 | District B 9 | Private 10 | Local Yield 11 | | Recharge 12 |
| 1989 WC Plan | 9,384 | 9,362 | 0 | 4,400 | CCID | | | 0 | 0 | | 0 | 13,762 |
| 1993 WC Plan | 10,080* | 2,644 | 0 | 3,181 | CCID | 0 | 0 | 95 | 1,075 | | 0 | 8,906 |
| 2025 | 10,080* | 10,080* | 0 | 4,389 | CCID | 0 | 3,550 | 95 | 1,075 | | 0 | 12,099 |

Contractor's Agricultural Water Demands

Maximum Productive Acres= 3,964

| Timeframe I | Crop Water Requirement (acre-feet) 15 | District Irrig. Efficiency 16 | Effective Precip (acre-feet) 17 | Reference Effective Precip (acre-ft) 18 | Calculated Net Crop Water Req (acre-feet) 19 | USBR Net Drop Water Req (acre-feet) 20 | Average Irrigated Area (acres) 21 | Reference Irrigated Area (acres) 22 | Calculated FOR (AF/acre) 23 | USBR FOR (AF/acre) 24 | Conveyance Loss (acre-feet) 25 | Total Ag Demand (acre-feet) 26 |
|----------------|--|--|--|---|--|--|---|---|--------------------------------------|-----------------------------|---|---|
| 1989 | 8,584 | 75 | 890 | 1,022 | 10,312 | 8,853 | 4,024 | 3,405 | 2.58 | 2.60 | 1,534 | 11,846 |
| 1993 | 8,339 | 75 | 2,032 | 1,043 | 8,409 | 8,340 | 3,972 | 3,475 | 2.12 | 2.40 | 1,235 | 9,644 |
| 2025 | 10,166 | 85 | 1,216 | 1,216 | 10,530 | 10,530 | 4,050 | 4,050 | 2.60 | 2.60 | 1,100 | 11,630 |

Contractor's M&I Water Demands

| Timeframe I | Residential Water Demand | | | Nonresidential Water Demand | | | Loss | Rural Urban Per Capita Demand (gpcd) 35 | Calc Urban Per Capita Demand (gpcd) 36 | Total MCI Demand (acre-feet) 37 | Total Ag. M&I Demand (acre-feet) 38 | Unmet Demand (acre-feet) 39 |
|----------------|--------------------------------------|--------------------------------------|--------------------------------------|---|--------------------------------------|---------------------------|------|--|---|--|--|--------------------------------------|
| | Per Capita Demand (gpcd) 27 | Total Demand (acre-feet) 28 | Total Demand (acre-feet) 29 | Comm/ Instl Demand (acre-feet) 30 | Total Demand (acre-feet) 31 | Loss (acre-feet) 32 | | | | | | |
| 1989 | | | | | | | 0 | 0 | | 0 | 11,846 | -1,916 |
| 1993 | | | | | | | 0 | 0 | | 0 | 9,644 | 2,649 |
| 2025 | | | | | | | 0 | 0 | | 0 | 11,630 | -469 |

Note: In 2025, 12 AF of urban water transferred out in order to limit analysis to assessment of agricultural water needs.

* Represents Maximum Contract Amount

Water supply and demand information is for a normal hydrologic year. Crop Water Requirement includes leaching req. and cultural water but not irrigation efficiency.

Information from contractor's water management plan or data submitted for historical years. USBR reference information for future years
Quality control check information is either calculated by USBR staff, or from reference.

Contractor's Water Supply Sources and Quantities (acre-feet)

| Timeframe | Surface Water Supply | | | | | | | Groundwater Supply | | | | Total Supply |
|--------------|----------------------|------------------------|-----|-------|---------------|------------------------|-----------|--------------------|---------|-------------|----------|--------------|
| | Reference Delivery | USBR Total Daily/Alloc | SWP | Local | Local Sources | Trans/Biore /Reservoir | Trans/Out | District | Private | State Yield | Recharge | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 1989 WC Plan | 96,061 | 91,887 | 0 | 0 | | 1,762 | 42 | 0 | 0 | | 0 | 93,637 |
| 2025 | 94,000* | 94,000* | 0 | 0 | | 0 | 48 | 0 | 0 | | 0 | 93,952 |

Contractor's Agricultural Water Demands

Maximum Productive Acres= 15,786

| Timeframe | Crop Water Requirement (acre-feet) | District Irrig. Efficiency (%) | Effective Precip (acre-feet) | Reference Effective Precip (acre-ft) | Calculated Net Crop Water Req. (acre-feet) | USBR Net Crop Water Req. (acre-feet) | Average Irrigated Acres | Reference Irrigated Acres | Calculated FDR (AF/acre) | USBR FDR (AF/acre) | Conveyance Loss (acre-feet) | Total Ag Demand (acre-feet) |
|-----------|------------------------------------|--------------------------------|------------------------------|--------------------------------------|--|--------------------------------------|-------------------------|---------------------------|--------------------------|--------------------|-----------------------------|-----------------------------|
| | | | | | | | | | | | | |
| 1989 | 90,707 | 76 | 6,555 | 10,676 | 98,869 | 99,641 | 36,661 | 35,566 | 2.77 | 2.60 | 7,903 | 106,772 |
| 2025 | 95,916 | 65 | 11,430 | 11,430 | 87,630 | 87,630 | 38,100 | 38,100 | 2.30 | 2.30 | 5,168 | 92,816 |

Contractor's M&I Water Demands

| Timeframe | Residential Water Demand | | | Agricultural Water Demand | | | Loss | Total Demand (acre-feet) | Total Urban Demand (acre-feet) | Total M&I Demand (acre-feet) | Total Ag. M&I Demand (acre-feet) | Unmet Demand (acre-feet) |
|-----------|--------------------------|------------|--------------------------|---------------------------|---------------|--------------------------|------|--------------------------|--------------------------------|------------------------------|----------------------------------|--------------------------|
| | Per Capita Demand (gpd) | Population | Total Demand (acre-feet) | Industrial | Commo./Instlt | Total Demand (acre-feet) | | | | | | |
| 1 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 |
| 1989 | | | | | | 0 | 0 | | | 0 | 106,772 | 13,135 |
| 2025 | | | | | | 0 | 0 | | | 0 | 92,816 | -1,136 |

Note: In 1989 and 2025, USBR total supply includes 42 & 48 AF M&I; these supplies are shown as transfers out to make this solely an assessment of ag water need.

* Represents Maximum Confirmed Amount

Water supply and demand information is for a normal hydrologic year. Crop Water Requirement includes leaching req. and cultural water but not irrigation efficiency.

Information from contractor's water management plan or data submitted for historical years. USBR reference information for future years.

Quality control check; information is either calculated by USBR staff, or from reference.

Contractor's Water Supply Sources and Quantities (acre-feet)

| Timeframe I | Surface Water Supply | | | | | | Groundwater Supply | | | | Total Supply S9 | |
|-----------------|----------------------------|-------------------------------|----------|------------|-------------------|---------------------------------|--------------------|---------------|---------------|---------------------|--------------------|----------------|
| | Reference Delivery 2 | USBR Total Deliv./Max 3 | DWP 4 | Local 5 | Local Source 6 | Treat/Reuse /Recycle In 7 | Treat/ Out 8 | District 9 | Private 10 | Safe Yield 11 | | Exchange 12 |
| 1989 WC Plan | 120,281 | 106,082 | 0 | 0 | | 13,038 | 1,864 | 0 | 10,000 | | 0 | 127,268 |
| 1998 WC Plan | 125,080* | 70,409 | 0 | 0 | | 4,458 | 2,894 | 0 | 10,000 | | 0 | 81,873 |
| 2025 | 125,080* | 125,080* | 0 | 0 | | 0 | 2,894 | 0 | 5,000 | | 0 | 127,188 |

Contractor's Agricultural Water Demands

Maximum Productive Acres= 50,463

| Timeframe I | Crop Water Requirement (acre-feet) 5 | District Irrig. Efficiency (%) 6 | Effective Precip. (acre-feet) 7 | Reference Effective Precip. (acre-ft) 8 | Calculated Net Crop Water Req. (acre-feet) 9 | USBR Net Drop Water Req. (acre-feet) 10 | Average Irrigated Acres 11 | Reference Irrigated Acres 12 | Calculated FDR (AF/acre) 13 | USBR FDR (AF/acre) 14 | CONVEYANCE Loss (acre-feet) 15 | Total Ag Demand (acre-feet) 16 |
|----------------|---|--|--|---|--|---|-------------------------------------|---------------------------------------|--------------------------------------|-----------------------------|---|---|
| 1989 | 126,994 | 75 | 9,289 | 13,365 | 159,807 | 129,389 | 44,784 | 44,517 | 3.57 | 2.90 | 442 | 160,049 |
| 1998 | 104,656 | 75 | 33,107 | | 85,399 | | 47,924 | | 1.99 | | 1,906 | 87,305 |
| 2025 | 112,843 | 85 | 13,060 | 13,050 | 117,450 | 117,450 | 43,500 | 43,500 | 2.70 | 2.70 | 1,906 | 119,356 |

Contractor's M&I Water Demands

| Timeframe I | Sanitation Water Demand | | | Microclimate Water Demand | | | Loss | Real Urban Per Capita Demand (gpcd) 35 | Calc Urban Per Capita Demand (gpcd) 36 | Total M&I Demand (acre-feet) 37 | Total Ag. M&I Demand (acre-feet) 38 | District Demand/ (acre-feet) 39 |
|----------------|-------------------------|--------------------------------------|--------------------------------------|---------------------------|-----------------------------------|--------------------------------------|-------------------------------------|---|---|--|--|--|
| | Population 25 | Per Capita Demand (gpcd) 26 | Total Demand (acre-feet) 27 | Industrial 28 | Comm/ M&I (acre-feet) 29 | Total Demand (acre-feet) 30 | Loss /Dist. (acre-feet) 31 | | | | | |
| 1989 | | | | | | 0 | 0 | | | 0 | 160,049 | 32,783 |
| 1998 | | | | | | 0 | 0 | | | 0 | 87,305 | 15,332 |
| 2025 | 0 | 0.0 | 700 | 0 | 0 | 0 | 0 | 0.0 | 0.0 | 700 | 120,056 | -7,130 |

Note: Historic transfers out includes M&I deliveries. Drainage water of 3,785 for 1989 and 2,621 for 1998 not included.

* Represents Maximum Contract Amount

Water supply and demand information is for a normal hydrologic year. Crop Water Requirement includes leaching req. and cultural water but not irrigation efficiency.

Information from contractor's water management plan or data submitted for historical years. USBR reference information for future years quality control check; information is either calculated by USBR staff, or from reference.

Contractor's Water Supply Sources and Quantities (acre-feet)

| Timeframe | Surface Water Supply | | | | | | | Groundwater Supply | | | | Total Supply |
|-----------|----------------------|----------------------|-----|-------|--------------|-----------------------|-------|--------------------|---------|-------|----------|--------------|
| | Reference Delivery | CBSS Total Daily/Max | SWP | Local | Local source | Treat/Str /Recycle to | Treat | District | Private | Yield | Recharge | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 1989 | 1,082,509 | 1,130,463 | 0 | 0 | | 32,885 | 5,420 | 0 | 175,000 | | 0 | 1,332,908 |
| 2025 | 1,150,000* | 1,150,000* | 0 | 0 | | 0 | 4,938 | 0 | 175,000 | | 0 | 1,320,062 |

Contractor's Agricultural Water Demands

Maximum Productive Acres= 545,258

| Timeframe | Crop Water Requirement (acre-feet) | District Irrig. Efficiency (%) | Effective Precip (acre-feet) | Reference Effective Precip (acre-ft) | Calculated Net Crop Water Req (acre-feet) | USBR Ref Crop Water Req (acre-feet) | Average Irrigated Acres | Reference Irrigated Acres | Calculated FCR (AF/acre) | CBSS FCR (AF/acre) | Conveyance Loss (acre-feet) | Total Ag Demand (acre-feet) |
|-----------|------------------------------------|--------------------------------|------------------------------|--------------------------------------|---|-------------------------------------|-------------------------|---------------------------|--------------------------|--------------------|-----------------------------|-----------------------------|
| 1 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| 1989 | 1,150,448 | 75 | 65,248 | 155,765 | 1,446,933 | 1,401,883 | 515,000 | 519,216 | 2.81 | 2.70 | 319 | 1,447,252 |
| 2025 | 1,368,756 | 85 | 181,830 | 161,830 | 1,394,030 | 1,394,030 | 606,100 | 606,100 | 2.30 | 2.30 | 319 | 1,384,349 |

Contractor's M&I Water Demands

| Timeframe | Residential Water Demand | | | Nonresidential Water Demand | | | Loss | Rat Urban Per Capita Demand (gpcd) | Cmc Urban Per Capita Demand (gpcd) | Total M&I Demand (acre-feet) | Total Ag. M&I Demand (acre-feet) | Unmet Demand (acre-feet) |
|-----------|--------------------------|--------------|-------|-----------------------------|------------|--------------|------|------------------------------------|------------------------------------|------------------------------|----------------------------------|--------------------------|
| | Per Capita Demand | Total Demand | Total | Industrial | Comm/Instn | Total Demand | | | | | | |
| 1 | 27 | 28 | 29 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 |
| 1989 | | | | | | 0 | 0 | | | 0 | 1,447,252 | 114,344 |
| 2025 | | | | | | 0 | 0 | | | 0 | 1,394,349 | 74,287 |

NOTE: In order to limit this to an assessment of agricultural water needs, M&I water in the amount of 5,420 AF in 1989 and 4,938 AF in 2025 are shown as transfers out.

* Represents Electric Contract Amount

Water supply and demand information is for a normal hydrologic year. Crop Water Requirement includes leaching req. and cultural water but not irrigation efficiency.

Information from contractor's water management plan or data submitted for historical years. USBR reference information for future years

Quality control check; information is either calculated by CBSS staff, or from reference.